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Protecting Distortion-Tolerant Data by Automatic Repeat Request (ARQ)
Disclosed by Ericsson Inc.

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Disclosed is a method for protecting distortion-tolerant data, such as digitally encoded speech or image for which perfect reconstruction at the receiver is not required, when a block of such data is sent over a noisy transmission channel, such as a channel provided by radio transmission.

By means of an error-correcting decoder, the receiver estimates the number of transmission errors impressed on the block of data as it traveled from transmitter to receiver. The receiver then determines the received data's relative importance to the signal-reconstruction process, i.e., the data's tolerance to distortion. This determination is made by referring to an explicit indication of importance carried within a header field appended to the block of data, or by deducing importance from the positional relationships among received data. Based on this determination, the receiver next selects a threshold that specifies a maximum permissible number of transmission errors commensurate with the importance of the data. The receiver then compares the estimated number of transmission errors with the maximum permissible number of such errors as specified by the threshold.

Whenever the estimated number of transmission errors falls below the threshold, the received block of data is deemed sufficiently reliable. In this case, any errors that fall within the error-correcting capability of the code are corrected, and the resulting block of data is passed to the next stage of the receiver. Otherwise, i.e., when the estimated number of transmission errors meets or exceeds the threshold, the data block is deemed unreliable, and corrective measures are enabled in accord with well-known ARQ algorithms.